SEQUENCE LISTING

<110> Valenzuela et al., David M.

<120> NOVEL TYROSINE KINASE RECEPTORS AND LIGANDS

<130> REG 195-BZ

<140> Not yet known
<141> Filed herewith

<150> 09/077,955
<151> 1998-09-10

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<151> 1996-12-13

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<151> 1996-05-10

<150> 60/008,657
<151> 1995-12-15

<160> 36

<170> PatentIn Ver. 2.0

<210> 1
<211> 868
<212> PRT
<213> Rattus sp.

<400> 1

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Met Arg Glu Leu Val Asn Ile Pro Leu Leu Gln Met Leu Thr Leu Val
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Ala Phe Ser Gly Thr Glu Lys Leu Pro Lys Ala Pro Val Ile Thr Thr
             20                  25                  30

Pro Leu Glu Thr Val Asp Ala Leu Val Glu Glu Val Ala Thr Phe Met
         35                  40                  45

Cys Ala Val Glu Ser Tyr Pro Gln Pro Glu Ile Ser Trp Thr Arg Asn
     50                  55                  60

Lys Ile Leu Ile Lys Leu Phe Asp Thr Arg Tyr Ser Ile Arg Glu Asn
 65                  70                  75                  80

Gly Gln Leu Leu Thr Ile Leu Ser Val Glu Asp Ser Asp Asp Gly Ile
                 85                  90                  95

Tyr Cys Cys Thr Ala Asn Asn Gly Val Gly Gly Ala Val Glu Ser Cys
            100                 105                 110

Gly Ala Leu Gln Val Lys Met Lys Pro Lys Ile Thr Arg Pro Pro Ile
        115                 120                 125

Asn Val Lys Ile Ile Glu Gly Leu Lys Ala Val Leu Pro Cys Thr Thr
    130                 135                 140
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Met Gly Asn Pro Lys Pro Ser Val Ser Trp Ile Lys Gly Asp Ser Ala
145                 150                 155                 160

Leu Arg Glu Asn Ser Arg Ile Ala Val Leu Glu Ser Gly Ser Leu Arg
                165                 170                 175

Ile His Asn Val Gln Lys Glu Asp Ala Gly Gln Tyr Arg Cys Val Ala
            180                 185                 190

Lys Asn Ser Leu Gly Thr Ala Tyr Ser Lys Leu Val Lys Leu Glu Val
        195                 200                 205

Glu Val Phe Ala Arg Ile Leu Arg Ala Pro Glu Ser His Asn Val Thr
    210                 215                 220

Phe Gly Ser Phe Val Thr Leu Arg Cys Thr Ala Ile Gly Met Pro Val
225                 230                 235                 240

Pro Thr Ile Ser Trp Ile Glu Asn Gly Asn Ala Val Ser Ser Gly Ser
                245                 250                 255

Ile Gln Glu Asn Val Lys Asp Arg Val Ile Asp Ser Arg Leu Gln Leu
            260                 265                 270

Phe Ile Thr Lys Pro Gly Leu Tyr Thr Cys Ile Ala Thr Asn Lys His
        275                 280                 285

Gly Glu Lys Phe Ser Thr Ala Lys Ala Ala Ala Thr Val Ser Ile Ala
    290                 295                 300

Glu Trp Ser Lys Ser Gln Lys Glu Ser Lys Gly Tyr Cys Ala Gln Tyr
305                 310                 315                 320

Arg Gly Glu Val Cys Asp Ala Val Leu Val Lys Asp Ser Leu Val Phe
                325                 330                 335

Phe Asn Thr Ser Tyr Pro Asp Pro Glu Glu Ala Gln Glu Leu Leu Ile
            340                 345                 350

His Thr Ala Trp Asn Glu Leu Lys Ala Val Ser Pro Leu Cys Arg Pro
        355                 360                 365

Ala Ala Glu Ala Leu Leu Cys Asn His Leu Phe Gln Glu Cys Ser Pro
    370                 375                 380

Gly Val Leu Pro Thr Pro Met Pro Ile Cys Arg Glu Tyr Cys Leu Ala
385                 390                 395                 400

Val Lys Glu Leu Phe Cys Ala Lys Glu Trp Leu Ala Met Glu Gly Lys
                405                 410                 415

Thr His Arg Gly Leu Tyr Arg Ser Gly Met His Phe Leu Pro Val Pro
            420                 425                 430

Glu Cys Ser Lys Leu Pro Ser Met His Gln Asp Pro Thr Ala Cys Thr
        435                 440                 445

Arg Leu Pro Tyr Leu Asp Tyr Lys Lys Glu Asn Ile Thr Thr Phe Pro
    450                 455                 460
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Ser Ile Thr Ser Ser Lys Pro Ser Val Asp Ile Pro Asn Leu Pro Ala
465 470 475 480

Ser Thr Ser Ser Phe Ala Val Ser Pro Ala Tyr Ser Met Thr Val Ile
485 490 495

Ile Ser Ile Met Ser Cys Phe Ala Val Phe Ala Leu Leu Thr Ile Thr
500 505 510

Thr Leu Tyr Cys Cys Arg Arg Arg Arg Glu Trp Lys Asn Lys Lys Arg
515 520 525

Glu Ser Ala Ala Val Thr Leu Thr Thr Leu Pro Ser Glu Leu Leu Leu
530 535 540

Asp Arg Leu His Pro Asn Pro Met Tyr Gln Arg Met Pro Leu Leu Leu
545 550 555 560

Asn Pro Lys Leu Leu Ser Leu Glu Tyr Pro Arg Asn Asn Ile Glu Tyr
565 570 575

Val Arg Asp Ile Gly Glu Gly Ala Phe Gly Arg Val Phe Gln Ala Arg
580 585 590

Ala Pro Gly Leu Leu Pro Tyr Glu Pro Phe Thr Met Val Ala Val Lys
595 600 605

Met Leu Lys Glu Glu Ala Ser Ala Asp Met Gln Ala Asp Phe Gln Arg
610 615 620

Glu Ala Ala Leu Met Ala Glu Phe Asp Asn Pro Asn Ile Val Lys Leu
625 630 635 640

Leu Gly Val Cys Ala Val Gly Lys Pro Met Cys Leu Leu Phe Glu Tyr
645 650 655

Met Ala Tyr Gly Asp Leu Asn Glu Phe Leu Arg Ser Met Ser Pro His
660 665 670

Thr Val Cys Ser Leu Ser His Ser Asp Leu Ser Thr Arg Ala Arg Val
675 680 685

Ser Ser Pro Gly Pro Pro Pro Leu Ser Cys Ala Glu Gln Leu Cys Ile
690 695 700

Ala Arg Gln Val Ala Ala Gly Met Ala Tyr Leu Ser Glu Arg Lys Phe
705 710 715 720

Val His Arg Asp Leu Ala Thr Arg Asn Cys Leu Val Gly Glu Asn Met
725 730 735

Val Val Lys Ile Ala Asp Phe Gly Leu Ser Arg Asn Ile Tyr Ser Ala
740 745 750

Asp Tyr Tyr Lys Ala Asp Gly Asn Asp Ala Ile Pro Ile Arg Trp Met
755 760 765

Pro Pro Glu Ser Ile Phe Tyr Asn Arg Tyr Thr Thr Glu Ser Asp Val
770 775 780

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Trp Ala Tyr Gly Val Val Leu Trp Glu Ile Phe Ser Tyr Gly Leu Gln
785                 790                 795                 800

Pro Tyr Tyr Gly Met Ala His Glu Glu Val Ile Tyr Tyr Val Arg Asp
                805                 810                 815

Gly Asn Ile Leu Ala Cys Pro Glu Asn Cys Pro Leu Glu Leu Tyr Asn
            820                 825                 830

Leu Met Arg Leu Cys Trp Ser Lys Leu Pro Ala Asp Arg Pro Ser Phe
        835                 840                 845

Cys Ser Ile His Arg Ile Leu Gln Arg Met Cys Glu Arg Ala Glu Gly
    850                 855                 860

Thr Val Gly Val
865
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<212> DNA
<213> Rattus sp.

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<400> 2

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<210> 3
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
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<400> 3
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<210> 4
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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<223> n=a, c, g, or t

<220>
<221> modified_base

<222> (24)
<223> n=a, c, g, or t

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<210> 5
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 5
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<210> 6
<211> 28
<212> DNA
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<220>
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<210> 7
<211> 6
<212> PRT
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<220>
<223> Description of Artificial Sequence: primer

<400> 7
Asp Leu Ala Ala Arg Asn
1 5

<210> 8
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<223> n=a, c, g, or t

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<400> 8
tcttgactcg agayytngcn gcnmgnaa 28

<210> 9
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<212> PRT
<213> Artificial Sequence

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<210> 10
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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<222> (12)
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<210> 11
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<212> PRT
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<220>
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<400> 11
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<210> 12
<211> 29
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<210> 13
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<400> 13
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1 5

<210> 14
<211> 29
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<222> (15)
<223> n=a, c, g, or t

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<220>
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<222> (18)
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<220>
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<222> (24)
<223> n=a, c, g, or t

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<210> 16
<211> 18
<212> PRT
<213> Gallus gallus

<400> 16
Thr Leu Pro Ser Glu Leu Leu Leu Asp Arg Leu His Pro Asn Pro Met
1 5 10 15

Tyr Gln

<210> 17
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 17
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<210> 18
<211> 18
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<220>
<223> Description of Artificial Sequence: primer

<400> 18
gtgcacatcc acaatggc 18

<210> 19
<211> 21
<212> DNA
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<220>
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<400> 19
gagcagaggg aaggttccct g 21

<210> 20
<211> 20
<212> DNA
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<220>
<223> Description of Artificial Sequence: primer

<400> 20
tcattgtccc agctgcgtgg 20

<210> 21
<211> 41
<212> DNA
<213> Homo sapiens

<400> 21
gagagaggtt taaacatgag cccctgccag cccaacccct g 41

<210> 22
<211> 39
<212> DNA
<213> Homo sapiens

<400> 22
ctctgcggcc gcttatcatg gggtggggca gggccgcag 39

<210> 23
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
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<400> 23
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<210> 24
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
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<400> 24
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<210> 25
<211> 456
<212> PRT
<213> Homo sapiens

<400> 25

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Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15

Tyr Lys Asp Asp Asp Asp Lys Gln Thr Ala Ser Gly Gln Asp Gly Ser
             20                  25                  30

Gly Pro Phe Leu Ala Asp Phe Asn Gly Phe Ser His Leu Glu Leu Arg
         35                  40                  45

Gly Leu His Thr Phe Ala Arg Asp Leu Gly Glu Lys Met Ala Leu Glu
     50                  55                  60

Val Val Phe Leu Ala Arg Gly Pro Ser Gly Leu Leu Leu Tyr Asn Gly
 65                  70                  75                  80

Gln Lys Thr Asp Gly Lys Gly Asp Phe Val Ser Leu Ala Leu Arg Asp
                 85                  90                  95

Arg Arg Leu Glu Phe Arg Tyr Asp Leu Gly Lys Gly Ala Ala Val Ile
            100                 105                 110

Arg Ser Arg Glu Pro Val Thr Leu Gly Ala Trp Thr Arg Val Ser Leu
        115                 120                 125

Glu Arg Asn Gly Arg Lys Gly Ala Leu Arg Val Gly Asp Gly Pro Arg
    130                 135                 140

Val Leu Gly Glu Ser Pro Lys Ser Arg Lys Val Pro His Thr Val Leu
145                 150                 155                 160

Asn Leu Lys Glu Pro Leu Tyr Val Gly Gly Ala Pro Asp Phe Ser Lys
                165                 170                 175

Leu Ala Arg Ala Ala Ala Val Ser Ser Gly Phe Asp Gly Ala Ile Gln
            180                 185                 190

Leu Val Ser Leu Gly Gly Arg Gln Leu Leu Thr Pro Glu His Val Leu
        195                 200                 205

Arg Gln Val Asp Val Thr Ser Phe Ala Gly His Pro Cys Thr Arg Ala
    210                 215                 220
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Ser Gly His Pro Cys Leu Asn Gly Ala Ser Cys Val Pro Arg Glu Ala
225                 230                 235                 240

Ala Tyr Val Cys Leu Cys Pro Gly Gly Phe Ser Gly Pro His Cys Glu
                245                 250                 255

Lys Gly Leu Val Glu Lys Ser Ala Gly Asp Val Asp Thr Leu Ala Phe
            260                 265                 270

Asp Gly Arg Thr Phe Val Glu Tyr Leu Asn Ala Val Thr Glu Ser Glu
        275                 280                 285

Leu Ala Asn Glu Ile Pro Val Glu Lys Ala Leu Gln Ser Asn His Phe
    290                 295                 300

Glu Leu Ser Leu Arg Thr Glu Ala Thr Gln Gly Leu Val Leu Trp Ser
305                 310                 315                 320

Gly Lys Ala Thr Glu Arg Ala Asp Tyr Val Ala Leu Ala Ile Val Asp
                325                 330                 335

Gly His Leu Gln Leu Ser Tyr Asn Leu Gly Ser Gln Pro Val Val Leu
            340                 345                 350

Arg Ser Thr Val Pro Val Asn Thr Asn Arg Trp Leu Arg Val Val Ala
        355                 360                 365

His Arg Glu Gln Arg Glu Gly Ser Leu Gln Val Gly Asn Glu Ala Pro
    370                 375                 380

Val Thr Gly Ser Ser Pro Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly
385                 390                 395                 400

Ala Leu Trp Leu Gly Gly Leu Pro Glu Leu Pro Val Gly Pro Ala Leu
                405                 410                 415

Pro Lys Ala Tyr Gly Thr Gly Phe Val Gly Cys Leu Arg Asp Val Val
            420                 425                 430

Val Gly Arg His Pro Leu His Leu Leu Glu Asp Ala Val Thr Lys Pro
        435                 440                 445

Glu Leu Arg Pro Cys Pro Thr Pro
    450                 455
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<210> 26
<211> 440
<212> PRT
<213> Homo sapiens

<400> 26

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Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15

Tyr Lys Asp Asp Asp Asp Lys Asn Gly Phe Ser His Leu Glu Leu Arg
             20                  25                  30

Gly Leu His Thr Phe Ala Arg Asp Leu Gly Glu Lys Met Ala Leu Glu
         35                  40                  45
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Val Val Phe Leu Ala Arg Gly Pro Ser Gly Leu Leu Leu Tyr Asn Gly
     50                  55                  60

Gln Lys Thr Asp Gly Lys Gly Asp Phe Val Ser Leu Ala Leu Arg Asp
 65                  70                  75                  80

Arg Arg Leu Glu Phe Arg Tyr Asp Leu Gly Lys Gly Ala Ala Val Ile
                 85                  90                  95

Arg Ser Arg Glu Pro Val Thr Leu Gly Ala Trp Thr Arg Val Ser Leu
            100                 105                 110

Glu Arg Asn Gly Arg Lys Gly Ala Leu Arg Val Gly Asp Gly Pro Arg
        115                 120                 125

Val Leu Gly Glu Ser Pro Lys Ser Arg Lys Val Pro His Thr Val Leu
    130                 135                 140

Asn Leu Lys Glu Pro Leu Tyr Val Gly Gly Ala Pro Asp Phe Ser Lys
145                 150                 155                 160

Leu Ala Arg Ala Ala Ala Val Ser Ser Gly Phe Asp Gly Ala Ile Gln
                165                 170                 175

Leu Val Ser Leu Gly Gly Arg Gln Leu Leu Thr Pro Glu His Val Leu
            180                 185                 190

Arg Gln Val Asp Val Thr Ser Phe Ala Gly His Pro Cys Thr Arg Ala
        195                 200                 205

Ser Gly His Pro Cys Leu Asn Gly Ala Ser Cys Val Pro Arg Glu Ala
    210                 215                 220

Ala Tyr Val Cys Leu Cys Pro Gly Gly Phe Ser Gly Pro His Cys Glu
225                 230                 235                 240

Lys Gly Leu Val Glu Lys Ser Ala Gly Asp Val Asp Thr Leu Ala Phe
                245                 250                 255

Asp Gly Arg Thr Phe Val Glu Tyr Leu Asn Ala Val Thr Glu Ser Glu
            260                 265                 270

Leu Ala Asn Glu Ile Pro Val Glu Lys Ala Leu Gln Ser Asn His Phe
        275                 280                 285

Glu Leu Ser Leu Arg Thr Glu Ala Thr Gln Gly Leu Val Leu Trp Ser
    290                 295                 300

Gly Lys Ala Thr Glu Arg Ala Asp Tyr Val Ala Leu Ala Ile Val Asp
305                 310                 315                 320

Gly His Leu Gln Leu Ser Tyr Asn Leu Gly Ser Gln Pro Val Val Leu
                325                 330                 335

Arg Ser Thr Val Pro Val Asn Thr Asn Arg Trp Leu Arg Val Val Ala
            340                 345                 350

His Arg Glu Gln Arg Glu Gly Ser Leu Gln Val Gly Asn Glu Ala Pro
        355                 360                 365
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Val Thr Gly Ser Ser Pro Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly
    370                 375                 380

Ala Leu Trp Leu Gly Gly Leu Pro Glu Leu Pro Val Gly Pro Ala Leu
385                 390                 395                 400

Pro Lys Ala Tyr Gly Thr Gly Phe Val Gly Cys Leu Arg Asp Val Val
                405                 410                 415

Val Gly Arg His Pro Leu His Leu Leu Glu Asp Ala Val Thr Lys Pro
            420                 425                 430

Glu Leu Arg Pro Cys Pro Thr Pro
        435                 440


<210> 27
<211> 390
<212> PRT
<213> Homo sapiens

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Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15

Tyr Lys Asp Asp Asp Asp Lys Val Ser Leu Ala Leu Arg Asp Arg Arg
            20                  25                  30

Leu Glu Phe Arg Tyr Asp Leu Gly Lys Gly Ala Ala Val Ile Arg Ser
        35                  40                  45

Arg Glu Pro Val Thr Leu Gly Ala Trp Thr Arg Val Ser Leu Glu Arg
    50                  55                  60

Asn Gly Arg Lys Gly Ala Leu Arg Val Gly Asp Gly Pro Arg Val Leu
65                  70                  75                  80

Gly Glu Ser Pro Lys Ser Arg Lys Val Pro His Thr Val Leu Asn Leu
                85                  90                  95

Lys Glu Pro Leu Tyr Val Gly Gly Ala Pro Asp Phe Ser Lys Leu Ala
            100                 105                 110

Arg Ala Ala Ala Val Ser Ser Gly Phe Asp Gly Ala Ile Gln Leu Val
        115                 120                 125

Ser Leu Gly Gly Arg Gln Leu Leu Thr Pro Glu His Val Leu Arg Gln
    130                 135                 140

Val Asp Val Thr Ser Phe Ala Gly His Pro Cys Thr Arg Ala Ser Gly
145                 150                 155                 160

His Pro Cys Leu Asn Gly Ala Ser Cys Val Pro Arg Glu Ala Ala Tyr
                165                 170                 175

Val Cys Leu Cys Pro Gly Gly Phe Ser Gly Pro His Cys Glu Lys Gly
            180                 185                 190

Leu Val Glu Lys Ser Ala Gly Asp Val Asp Thr Leu Ala Phe Asp Gly
        195                 200                 205
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Arg Thr Phe Val Glu Tyr Leu Asn Ala Val Thr Glu Ser Glu Leu Ala
    210                 215                 220

Asn Glu Ile Pro Val Glu Lys Ala Leu Gln Ser Asn His Phe Glu Leu
225                 230                 235                 240

Ser Leu Arg Thr Glu Ala Thr Gln Gly Leu Val Leu Trp Ser Gly Lys
                245                 250                 255

Ala Thr Glu Arg Ala Asp Tyr Val Ala Leu Ala Ile Val Asp Gly His
            260                 265                 270

Leu Gln Leu Ser Tyr Asn Leu Gly Ser Gln Pro Val Val Leu Arg Ser
        275                 280                 285

Thr Val Pro Val Asn Thr Asn Arg Trp Leu Arg Val Val Ala His Arg
    290                 295                 300

Glu Gln Arg Glu Gly Ser Leu Gln Val Gly Asn Glu Ala Pro Val Thr
305                 310                 315                 320

Gly Ser Ser Pro Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly Ala Leu
                325                 330                 335

Trp Leu Gly Gly Leu Pro Glu Leu Pro Val Gly Pro Ala Leu Pro Lys
            340                 345                 350

Ala Tyr Gly Thr Gly Phe Val Gly Cys Leu Arg Asp Val Val Val Gly
        355                 360                 365

Arg His Pro Leu His Leu Leu Glu Asp Ala Val Thr Lys Pro Glu Leu
    370                 375                 380

Arg Pro Cys Pro Thr Pro
385                 390
```

<210> 28
<211> 338
<212> PRT
<213> Homo sapiens

<400> 28

```
Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15

Tyr Lys Asp Asp Asp Asp Lys Gly Pro Arg Val Leu Gly Glu Ser Pro
            20                  25                  30

Lys Ser Arg Lys Val Pro His Thr Val Leu Asn Leu Lys Glu Pro Leu
        35                  40                  45

Tyr Val Gly Gly Ala Pro Asp Phe Ser Lys Leu Ala Arg Ala Ala Ala
    50                  55                  60

Val Ser Ser Gly Phe Asp Gly Ala Ile Gln Leu Val Ser Leu Gly Gly
65                  70                  75                  80

Arg Gln Leu Leu Thr Pro Glu His Val Leu Arg Gln Val Asp Val Thr
                85                  90                  95
```

```
Ser Phe Ala Gly His Pro Cys Thr Arg Ala Ser Gly His Pro Cys Leu
            100                 105                 110

Asn Gly Ala Ser Cys Val Pro Arg Glu Ala Ala Tyr Val Cys Leu Cys
        115                 120                 125

Pro Gly Gly Phe Ser Gly Pro His Cys Glu Lys Gly Leu Val Glu Lys
    130                 135                 140

Ser Ala Gly Asp Val Asp Thr Leu Ala Phe Asp Gly Arg Thr Phe Val
145                 150                 155                 160

Glu Tyr Leu Asn Ala Val Thr Glu Ser Glu Leu Ala Asn Glu Ile Pro
                165                 170                 175

Val Glu Lys Ala Leu Gln Ser Asn His Phe Glu Leu Ser Leu Arg Thr
            180                 185                 190

Glu Ala Thr Gln Gly Leu Val Leu Trp Ser Gly Lys Ala Thr Glu Arg
        195                 200                 205

Ala Asp Tyr Val Ala Leu Ala Ile Val Asp Gly His Leu Gln Leu Ser
    210                 215                 220

Tyr Asn Leu Gly Ser Gln Pro Val Val Leu Arg Ser Thr Val Pro Val
225                 230                 235                 240

Asn Thr Asn Arg Trp Leu Arg Val Val Ala His Arg Glu Gln Arg Glu
                245                 250                 255

Gly Ser Leu Gln Val Gly Asn Glu Ala Pro Val Thr Gly Ser Ser Pro
            260                 265                 270

Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly Ala Leu Trp Leu Gly Gly
        275                 280                 285

Leu Pro Glu Leu Pro Val Gly Pro Ala Leu Pro Lys Ala Tyr Gly Thr
    290                 295                 300

Gly Phe Val Gly Cys Leu Arg Asp Val Val Val Gly Arg His Pro Leu
305                 310                 315                 320

His Leu Leu Glu Asp Ala Val Thr Lys Pro Glu Leu Arg Pro Cys Pro
                325                 330                 335

Thr Pro
```

<210> 29
<211> 294
<212> PRT
<213> Homo sapiens

<400> 29

```
Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15

Tyr Lys Asp Asp Asp Asp Lys Gly Phe Asp Gly Ala Ile Gln Leu Val
             20                  25                  30
```

```
Ser Leu Gly Gly Arg Gln Leu Leu Thr Pro Glu His Val Leu Arg Gln
         35                  40                  45

Val Asp Val Thr Ser Phe Ala Gly His Pro Cys Thr Arg Ala Ser Gly
     50                  55                  60

His Pro Cys Leu Asn Gly Ala Ser Cys Val Pro Arg Glu Ala Ala Tyr
 65                  70                  75                  80

Val Cys Leu Cys Pro Gly Gly Phe Ser Gly Pro His Cys Glu Lys Gly
                 85                  90                  95

Leu Val Glu Lys Ser Ala Gly Asp Val Asp Thr Leu Ala Phe Asp Gly
            100                 105                 110

Arg Thr Phe Val Glu Tyr Leu Asn Ala Val Thr Glu Ser Glu Leu Ala
        115                 120                 125

Asn Glu Ile Pro Val Glu Lys Ala Leu Gln Ser Asn His Phe Glu Leu
    130                 135                 140

Ser Leu Arg Thr Glu Ala Thr Gln Gly Leu Val Leu Trp Ser Gly Lys
145                 150                 155                 160

Ala Thr Glu Arg Ala Asp Tyr Val Ala Leu Ala Ile Val Asp Gly His
                165                 170                 175

Leu Gln Leu Ser Tyr Asn Leu Gly Ser Gln Pro Val Val Leu Arg Ser
            180                 185                 190

Thr Val Pro Val Asn Thr Asn Arg Trp Leu Arg Val Val Ala His Arg
        195                 200                 205

Glu Gln Arg Glu Gly Ser Leu Gln Val Gly Asn Glu Ala Pro Val Thr
    210                 215                 220

Gly Ser Ser Pro Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly Ala Leu
225                 230                 235                 240

Trp Leu Gly Gly Leu Pro Glu Leu Pro Val Gly Pro Ala Leu Pro Lys
                245                 250                 255

Ala Tyr Gly Thr Gly Phe Val Gly Cys Leu Arg Asp Val Val Val Gly
            260                 265                 270

Arg His Pro Leu His Leu Leu Glu Asp Ala Val Thr Lys Pro Glu Leu
        275                 280                 285

Arg Pro Cys Pro Thr Pro
    290


<210> 30
<211> 256
<212> PRT
<213> Homo sapiens

<400> 30
Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15
```

```
Tyr Lys Asp Asp Asp Asp Lys Ala Ser Gly His Pro Cys Leu Asn Gly
            20                  25                  30

Ala Ser Cys Val Pro Arg Glu Ala Ala Tyr Val Cys Leu Cys Pro Gly
        35                  40                  45

Gly Phe Ser Gly Pro His Cys Glu Lys Gly Leu Val Glu Lys Ser Ala
    50                  55                  60

Gly Asp Val Asp Thr Leu Ala Phe Asp Gly Arg Thr Phe Val Glu Tyr
65                  70                  75                  80

Leu Asn Ala Val Thr Glu Ser Glu Leu Ala Asn Glu Ile Pro Val Glu
                85                  90                  95

Lys Ala Leu Gln Ser Asn His Phe Glu Leu Ser Leu Arg Thr Glu Ala
            100                 105                 110

Thr Gln Gly Leu Val Leu Trp Ser Gly Lys Ala Thr Glu Arg Ala Asp
        115                 120                 125

Tyr Val Ala Leu Ala Ile Val Asp Gly His Leu Gln Leu Ser Tyr Asn
    130                 135                 140

Leu Gly Ser Gln Pro Val Val Leu Arg Ser Thr Val Pro Val Asn Thr
145                 150                 155                 160

Asn Arg Trp Leu Arg Val Val Ala His Arg Glu Gln Arg Glu Gly Ser
                165                 170                 175

Leu Gln Val Gly Asn Glu Ala Pro Val Thr Gly Ser Ser Pro Leu Gly
            180                 185                 190

Ala Thr Gln Leu Asp Thr Asp Gly Ala Leu Trp Leu Gly Gly Leu Pro
        195                 200                 205

Glu Leu Pro Val Gly Pro Ala Leu Pro Lys Ala Tyr Gly Thr Gly Phe
    210                 215                 220

Val Gly Cys Leu Arg Asp Val Val Val Gly Arg His Pro Leu His Leu
225                 230                 235                 240

Leu Glu Asp Ala Val Thr Lys Pro Glu Leu Arg Pro Cys Pro Thr Pro
                245                 250                 255
```

<210> 31
<211> 216
<212> PRT
<213> Homo sapiens

<400> 31

```
Met Ser Ala Leu Leu Ile Leu Ala Leu Val Gly Ala Ala Val Ala Asp
  1               5                  10                  15

Tyr Lys Asp Asp Asp Asp Lys Ala Gly Asp Val Asp Thr Leu Ala Phe
            20                  25                  30
```

```
Asp Gly Arg Thr Phe Val Glu Tyr Leu Asn Ala Val Thr Glu Ser Glu
         35                  40                  45

Leu Ala Asn Glu Ile Pro Val Glu Lys Ala Leu Gln Ser Asn His Phe
     50                  55                  60

Glu Leu Ser Leu Arg Thr Glu Ala Thr Gln Gly Leu Val Leu Trp Ser
 65                  70                  75                  80

Gly Lys Ala Thr Glu Arg Ala Asp Tyr Val Ala Leu Ala Ile Val Asp
                 85                  90                  95

Gly His Leu Gln Leu Ser Tyr Asn Leu Gly Ser Gln Pro Val Val Leu
            100                 105                 110

Arg Ser Thr Val Pro Val Asn Thr Asn Arg Trp Leu Arg Val Val Ala
        115                 120                 125

His Arg Glu Gln Arg Glu Gly Ser Leu Gln Val Gly Asn Glu Ala Pro
    130                 135                 140

Val Thr Gly Ser Ser Pro Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly
145                 150                 155                 160

Ala Leu Trp Leu Gly Gly Leu Pro Glu Leu Pro Val Gly Pro Ala Leu
                165                 170                 175

Pro Lys Ala Tyr Gly Thr Gly Phe Val Gly Cys Leu Arg Asp Val Val
            180                 185                 190

Val Gly Arg His Pro Leu His Leu Leu Glu Asp Ala Val Thr Lys Pro
        195                 200                 205

Glu Leu Arg Pro Cys Pro Thr Pro
    210                 215
```

<210> 32
<211> 2610
<212> DNA
<213> Homo sapiens

<400> 32

```
atgagagagc tcgtcaacat tccactggta catattctta ctctggttgc cttcagcgga 60
actgagaaac ttccaaaagc tcctgtcatc accactcctc ttgaaacagt ggatgcctta 120
gttgaagaag tggctacttt catgtgtgca gtggaatcct acccccagcc tgagatttcc 180
tggactagaa ataaaattct cattaaactc tttgacaccc ggtacagcat ccgggagaat 240
gggcagctcc tcaccatcct gagtgtggaa gacagtgatg atggcattta ctgctgcacg 300
gccaacaatg gtgtgggagg agctgtggag agttgtggag ccctgcaagt gaagatgaaa 360
cctaaaataa ctcgccctcc cataaatgtg aaaataatag agggattaaa agcagtccta 420
ccatgtacta caatgggtaa tcccaaacca tcagtgtctt ggataaaggg agacagccct 480
ctcagggaaa attcccgaat tgcagttctt gaatctggga gcttgaggat tcataacgta 540
caaaaggaag atgcaggaca gtatcgatgt gtggcaaaaa acagcctcgg gacagcatat 600
tccaaagtgg tgaagctgga agttgaggtt tttgccagga tcctgcgggc tcctgaatcc 660
cacaatgtca cctttggctc ctttgtgacc ctgcactgta cagcaacagg cattcctgtc 720
cccaccatca cctggattga aaacggaaat gctgtttctt ctgggtccat tcaagagagt 780
gtgaaagacc gagtgattga ctcaagactg cagctgttta tcaccaagcc aggactctac 840
acatgcatag ctaccaataa gcatggggag aagttcagta ctgccaaggc tgcagccacc 900
atcagcatag cagaatggag taaaccacag aaagataaca aaggctactg cgcccagtac 960
agaggggagg tgtgtaatgc agtcctggca aaagatgctc ttgtttttct caacacctcc 1020
tatgcggacc ctgaggaggc ccaagagcta ctggtccaca cggcctggaa tgaactgaaa 1080
```

```
gtagtgagcc cagtctgccg gccagctgct gaggctttgt tgtgtaacca catcttccag 1140
gagtgcagtc ctggagtagt gcctactcct attcccattt gcagagagta ctgcttggca 1200
gtaaaggagc tcttctgcgc aaaagaatgg ctggtaatgg aagagaagac ccacagagga 1260
ctctacagat ccgagatgca tttgctgtcc gtgccagaat gcagcaagct tcccagcatg 1320
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tcctcctctt cttccttctc tgtctcacct acatactcca tgactgtaat aatctccatc 1500
atgtccagct ttgcaatatt tgtgcttctt accataacta ctctctattg ctgccgaaga 1560
agaaaacaat ggaaaaataa gaaaagagaa tcagcagcag taaccctcac cacactgcct 1620
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gagagggcag agggaactgt gagtgtctaa                                  2610
```

<210> 33
<211> 869
<212> PRT
<213> Homo sapiens

<400> 33

```
Met Arg Glu Leu Val Asn Ile Pro Leu Val His Ile Leu Thr Leu Val
  1               5                  10                  15

Ala Phe Ser Gly Thr Glu Lys Leu Pro Lys Ala Pro Val Ile Thr Thr
             20                  25                  30

Pro Leu Glu Thr Val Asp Ala Leu Val Glu Glu Val Ala Thr Phe Met
         35                  40                  45

Cys Ala Val Glu Ser Tyr Pro Gln Pro Glu Ile Ser Trp Thr Arg Asn
     50                  55                  60

Lys Ile Leu Ile Lys Leu Phe Asp Thr Arg Tyr Ser Ile Arg Glu Asn
 65                  70                  75                  80

Gly Gln Leu Leu Thr Ile Leu Ser Val Glu Asp Ser Asp Asp Gly Ile
                 85                  90                  95

Tyr Cys Cys Thr Ala Asn Asn Gly Val Gly Gly Ala Val Glu Ser Cys
            100                 105                 110

Gly Ala Leu Gln Val Lys Met Lys Pro Lys Ile Thr Arg Pro Pro Ile
        115                 120                 125

Asn Val Lys Ile Ile Glu Gly Leu Lys Ala Val Leu Pro Cys Thr Thr
    130                 135                 140
```

```
Met Gly Asn Pro Lys Pro Ser Val Ser Trp Ile Lys Gly Asp Ser Pro
145                 150                 155                 160

Leu Arg Glu Asn Ser Arg Ile Ala Val Leu Glu Ser Gly Ser Leu Arg
                165                 170                 175

Ile His Asn Val Gln Lys Glu Asp Ala Gly Gln Tyr Arg Cys Val Ala
            180                 185                 190

Lys Asn Ser Leu Gly Thr Ala Tyr Ser Lys Val Val Lys Leu Glu Val
        195                 200                 205

Glu Val Phe Ala Arg Ile Leu Arg Ala Pro Glu Ser His Asn Val Thr
    210                 215                 220

Phe Gly Ser Phe Val Thr Leu His Cys Thr Ala Thr Gly Ile Pro Val
225                 230                 235                 240

Pro Thr Ile Thr Trp Ile Glu Asn Gly Asn Ala Val Ser Ser Gly Ser
                245                 250                 255

Ile Gln Glu Ser Val Lys Asp Arg Val Ile Asp Ser Arg Leu Gln Leu
            260                 265                 270

Phe Ile Thr Lys Pro Gly Leu Tyr Thr Cys Ile Ala Thr Asn Lys His
        275                 280                 285

Gly Glu Lys Phe Ser Thr Ala Lys Ala Ala Ala Thr Ile Ser Ile Ala
    290                 295                 300

Glu Trp Ser Lys Pro Gln Lys Asp Asn Lys Gly Tyr Cys Ala Gln Tyr
305                 310                 315                 320

Arg Gly Glu Val Cys Asn Ala Val Leu Ala Lys Asp Ala Leu Val Phe
                325                 330                 335

Leu Asn Thr Ser Tyr Ala Asp Pro Glu Glu Ala Gln Glu Leu Leu Val
            340                 345                 350

His Thr Ala Trp Asn Glu Leu Lys Val Val Ser Pro Val Cys Arg Pro
        355                 360                 365

Ala Ala Glu Ala Leu Leu Cys Asn His Ile Phe Gln Glu Cys Ser Pro
    370                 375                 380

Gly Val Val Pro Thr Pro Ile Pro Ile Cys Arg Glu Tyr Cys Leu Ala
385                 390                 395                 400

Val Lys Glu Leu Phe Cys Ala Lys Glu Trp Leu Val Met Glu Glu Lys
                405                 410                 415

Thr His Arg Gly Leu Tyr Arg Ser Glu Met His Leu Leu Ser Val Pro
            420                 425                 430

Glu Cys Ser Lys Leu Pro Ser Met His Trp Asp Pro Thr Ala Cys Ala
        435                 440                 445

Arg Leu Pro His Leu Asp Tyr Asn Lys Glu Asn Leu Lys Thr Phe Pro
    450                 455                 460
```

```
Pro Met Thr Ser Ser Lys Pro Ser Val Asp Ile Pro Asn Leu Pro Ser
465                 470                 475                 480

Ser Ser Ser Ser Ser Phe Ser Val Ser Pro Thr Tyr Ser Met Thr Val
                485                 490                 495

Ile Ile Ser Ile Met Ser Ser Phe Ala Ile Phe Val Leu Leu Thr Ile
            500                 505                 510

Thr Thr Leu Tyr Cys Cys Arg Arg Arg Lys Gln Trp Lys Asn Lys Lys
        515                 520                 525

Arg Glu Ser Ala Ala Val Thr Leu Thr Thr Leu Pro Ser Glu Leu Leu
    530                 535                 540

Leu Asp Arg Leu His Pro Asn Pro Met Tyr Gln Arg Met Pro Leu Leu
545                 550                 555                 560

Leu Asn Pro Lys Leu Leu Ser Leu Glu Tyr Pro Arg Asn Asn Ile Glu
                565                 570                 575

Tyr Val Arg Asp Ile Gly Glu Gly Ala Phe Gly Arg Val Phe Gln Ala
            580                 585                 590

Arg Ala Pro Gly Leu Leu Pro Tyr Glu Pro Phe Thr Met Val Ala Val
        595                 600                 605

Lys Met Leu Lys Glu Glu Ala Ser Ala Asp Met Gln Ala Asp Phe Gln
    610                 615                 620

Arg Glu Ala Ala Leu Met Ala Glu Phe Asp Asn Pro Asn Ile Val Lys
625                 630                 635                 640

Leu Leu Gly Val Cys Ala Val Gly Lys Pro Met Cys Leu Leu Phe Glu
                645                 650                 655

Tyr Met Ala Tyr Gly Asp Leu Asn Glu Phe Leu Arg Ser Met Ser Pro
            660                 665                 670

His Thr Val Cys Ser Leu Ser His Ser Asp Leu Ser Met Arg Ala Gln
        675                 680                 685

Val Ser Ser Pro Gly Pro Pro Pro Leu Ser Cys Ala Glu Gln Leu Cys
    690                 695                 700

Ile Ala Arg Gln Val Ala Ala Gly Met Ala Tyr Leu Ser Glu Arg Lys
705                 710                 715                 720

Phe Val His Arg Asp Leu Ala Thr Arg Asn Cys Leu Val Gly Glu Asn
                725                 730                 735

Met Val Val Lys Ile Ala Asp Phe Gly Leu Ser Arg Asn Ile Tyr Ser
            740                 745                 750

Ala Asp Tyr Tyr Lys Ala Asn Glu Asn Asp Ala Ile Pro Ile Arg Trp
        755                 760                 765

Met Pro Pro Glu Ser Ile Phe Tyr Asn Arg Tyr Thr Thr Glu Ser Asp
    770                 775                 780
```

```
Val Trp Ala Tyr Gly Val Val Leu Trp Glu Ile Phe Ser Tyr Gly Leu
785                 790                 795                 800

Gln Pro Tyr Tyr Gly Met Ala His Glu Glu Val Ile Tyr Tyr Val Arg
                805                 810                 815

Asp Gly Asn Ile Leu Ser Cys Pro Glu Asn Cys Pro Val Glu Leu Tyr
            820                 825                 830

Asn Leu Met Arg Leu Cys Trp Ser Lys Leu Pro Ala Asp Arg Pro Ser
        835                 840                 845

Phe Thr Ser Ile His Arg Ile Leu Glu Arg Met Cys Glu Arg Ala Glu
    850                 855                 860

Gly Thr Val Ser Val
865
```

<210> 34
<211> 1940
<212> PRT
<213> Rattus sp.

<400> 34

```
Met Pro Pro Leu Pro Leu Glu His Arg Pro Arg Gln Glu Pro Gly Ala
 1               5                  10                  15

Ser Met Leu Val Arg Tyr Phe Met Ile Pro Cys Asn Ile Cys Leu Ile
            20                  25                  30

Leu Leu Ala Thr Ser Thr Leu Gly Phe Ala Val Leu Leu Phe Leu Ser
        35                  40                  45

Asn Tyr Lys Pro Gly Ile His Phe Thr Pro Ala Pro Pro Thr Pro Pro
    50                  55                  60

Asp Val Cys Arg Gly Met Leu Cys Gly Phe Gly Ala Val Cys Glu Pro
65                  70                  75                  80

Ser Val Glu Asp Pro Gly Arg Ala Ser Cys Val Cys Lys Lys Asn Ala
                85                  90                  95

Cys Pro Ala Thr Val Ala Pro Val Cys Gly Ser Asp Ala Ser Thr Tyr
            100                 105                 110

Ser Asn Glu Cys Glu Leu Gln Arg Ala Gln Cys Asn Gln Gln Arg Arg
        115                 120                 125

Ile Arg Leu Leu Arg Gln Gly Pro Cys Gly Ser Arg Asp Pro Cys Ala
    130                 135                 140

Asn Val Thr Cys Ser Phe Gly Ser Thr Cys Val Pro Ser Ala Asp Gly
145                 150                 155                 160

Gln Thr Ala Ser Cys Leu Cys Pro Thr Thr Cys Phe Gly Ala Pro Asp
                165                 170                 175

Gly Thr Val Cys Gly Ser Asp Gly Val Asp Tyr Pro Ser Glu Cys Gln
            180                 185                 190
```

```
Leu Leu Ser His Ala Cys Ala Ser Gln Glu His Ile Phe Lys Lys Phe
        195                 200                 205

Asn Gly Pro Cys Asp Pro Cys Gln Gly Ser Met Ser Asp Leu Asn His
    210                 215                 220

Ile Cys Arg Val Asn Pro Arg Thr Arg His Pro Glu Met Leu Leu Arg
225                 230                 235                 240

Pro Glu Asn Cys Pro Ala Gln His Thr Pro Ile Cys Gly Asp Asp Gly
                245                 250                 255

Val Thr Tyr Glu Asn Asp Cys Val Met Ser Arg Ile Gly Ala Thr Arg
            260                 265                 270

Gly Leu Leu Leu Gln Lys Val Arg Ser Gly Gln Cys Gln Thr Arg Asp
        275                 280                 285

Gln Cys Pro Glu Thr Cys Gln Phe Asn Ser Val Cys Leu Ser Arg Arg
    290                 295                 300

Gly Arg Pro His Cys Ser Cys Asp Arg Val Thr Cys Asp Gly Ser Tyr
305                 310                 315                 320

Arg Pro Val Cys Ala Gln Asp Gly His Thr Tyr Asn Asn Asp Cys Trp
                325                 330                 335

Arg Gln Gln Ala Glu Cys Arg Gln Gln Arg Ala Ile Pro Pro Lys His
            340                 345                 350

Gln Gly Pro Cys Asp Gln Thr Pro Ser Pro Cys His Gly Val Gln Cys
        355                 360                 365

Ala Phe Gly Ala Val Cys Thr Val Lys Asn Gly Lys Ala Glu Cys Glu
    370                 375                 380

Cys Gln Arg Val Cys Ser Gly Ile Tyr Asp Pro Val Cys Gly Ser Asp
385                 390                 395                 400

Gly Val Thr Tyr Gly Ser Val Cys Glu Leu Glu Ser Met Ala Cys Thr
                405                 410                 415

Leu Gly Arg Glu Ile Gln Val Ala Arg Arg Gly Pro Cys Asp Pro Cys
            420                 425                 430

Gly Gln Cys Arg Phe Gly Ser Leu Cys Glu Val Glu Thr Gly Arg Cys
        435                 440                 445

Val Cys Pro Ser Glu Cys Val Glu Ser Ala Gln Pro Val Cys Gly Ser
    450                 455                 460

Asp Gly His Thr Tyr Ala Ser Glu Cys Glu Leu His Val His Ala Cys
465                 470                 475                 480

Thr His Gln Ile Ser Leu Tyr Val Ala Ser Ala Gly His Cys Gln Thr
                485                 490                 495

Cys Gly Glu Lys Val Cys Thr Phe Gly Ala Val Cys Ser Ala Gly Gln
            500                 505                 510
```

```
Cys Val Cys Pro Arg Cys Glu His Pro Pro Pro Gly Pro Val Cys Gly
        515                 520                 525

Ser Asp Gly Val Thr Tyr Leu Ser Ala Cys Glu Leu Arg Glu Ala Ala
    530                 535                 540

Cys Gln Gln Gln Val Gln Ile Glu Glu Ala His Ala Gly Pro Cys Glu
545                 550                 555                 560

Pro Ala Glu Cys Gly Ser Gly Gly Ser Gly Ser Gly Glu Asp Asp Glu
                565                 570                 575

Cys Glu Gln Glu Leu Cys Arg Gln Arg Gly Gly Ile Trp Asp Glu Asp
            580                 585                 590

Ser Glu Asp Gly Pro Cys Val Cys Asp Phe Ser Cys Gln Ser Val Pro
        595                 600                 605

Arg Ser Pro Val Cys Gly Ser Asp Gly Val Thr Tyr Gly Thr Glu Cys
    610                 615                 620

Asp Leu Lys Lys Ala Arg Cys Glu Ser Gln Gln Glu Leu Tyr Val Ala
625                 630                 635                 640

Ala Gln Gly Ala Cys Arg Gly Pro Thr Leu Ala Pro Leu Leu Pro Val
                645                 650                 655

Ala Phe Pro His Cys Ala Gln Thr Pro Tyr Gly Cys Cys Gln Asp Asn
            660                 665                 670

Phe Thr Ala Ala Gln Gly Val Gly Leu Ala Gly Cys Pro Ser Thr Cys
        675                 680                 685

His Cys Asn Pro His Gly Ser Tyr Ser Gly Thr Cys Asp Pro Ala Thr
    690                 695                 700

Gly Gln Cys Ser Cys Arg Pro Gly Val Gly Gly Leu Arg Cys Asp Arg
705                 710                 715                 720

Cys Glu Pro Gly Phe Trp Asn Phe Arg Gly Ile Val Thr Asp Gly His
                725                 730                 735

Ser Gly Cys Thr Pro Cys Ser Cys Asp Pro Arg Gly Ala Val Arg Asp
            740                 745                 750

Asp Cys Glu Gln Met Thr Gly Leu Cys Ser Cys Arg Pro Gly Val Ala
        755                 760                 765

Gly Pro Lys Cys Gly Gln Cys Pro Asp Gly Gln Val Leu Gly His Leu
    770                 775                 780

Gly Cys Glu Ala Asp Pro Met Thr Pro Val Thr Cys Val Glu Ile His
785                 790                 795                 800

Cys Glu Phe Gly Ala Ser Cys Val Glu Lys Ala Gly Phe Ala Gln Cys
                805                 810                 815

Ile Cys Pro Thr Leu Thr Cys Pro Glu Ala Asn Ser Thr Lys Val Cys
            820                 825                 830
```

```
Gly Ser Asp Gly Val Thr Tyr Gly Asn Glu Cys Gln Leu Lys Ala Ile
        835                 840                 845

Ala Cys Arg Gln Arg Leu Asp Ile Ser Thr Gln Ser Leu Gly Pro Cys
    850                 855                 860

Gln Glu Ser Val Thr Pro Gly Ala Ser Pro Thr Ser Ala Ser Met Thr
865                 870                 875                 880

Thr Pro Arg His Ile Leu Ser Lys Thr Leu Pro Phe Pro His Asn Ser
                885                 890                 895

Leu Pro Leu Ser Pro Gly Ser Thr Thr His Asp Trp Pro Thr Pro Leu
            900                 905                 910

Pro Ile Ser Pro His Thr Thr Val Ser Ile Pro Arg Ser Thr Ala Trp
        915                 920                 925

Pro Val Leu Thr Val Pro Pro Thr Ala Ala Ala Ser Asp Val Thr Ser
    930                 935                 940

Leu Ala Thr Ser Ile Phe Ser Glu Ser Gly Ser Ala Asn Gly Ser Gly
945                 950                 955                 960

Asp Glu Glu Leu Ser Gly Asp Glu Glu Ala Ser Gly Gly Gly Ser Gly
                965                 970                 975

Gly Leu Glu Pro Pro Val Gly Ser Ile Val Val Thr His Gly Pro Pro
            980                 985                 990

Ile Glu Arg Ala Ser Cys Tyr Asn Ser Pro Leu Gly Cys Cys Ser Asp
        995                1000                1005

Gly Lys Thr Pro Ser Leu Asp Ser Glu Gly Ser Asn Cys Pro Ala Thr
   1010                1015                1020

Lys Ala Phe Gln Gly Val Leu Glu Leu Glu Gly Val Glu Gly Gln Glu
1025                1030                1035                1040

Leu Phe Tyr Thr Pro Glu Met Ala Asp Pro Lys Ser Glu Leu Phe Gly
                1045                1050                1055

Glu Thr Ala Arg Ser Ile Glu Ser Thr Leu Asp Asp Leu Phe Arg Asn
            1060                1065                1070

Ser Asp Val Lys Lys Asp Phe Trp Ser Val Arg Leu Arg Glu Leu Gly
        1075                1080                1085

Pro Gly Lys Leu Val Arg Ala Ile Val Asp Val His Phe Asp Pro Thr
   1090                1095                1100

Thr Ala Phe Gln Ala Ser Asp Val Gly Gln Ala Leu Leu Arg Gln Ile
1105                1110                1115                1120

Gln Val Ser Arg Pro Trp Ala Leu Ala Val Arg Arg Pro Leu Gln Glu
                1125                1130                1135

His Val Arg Phe Leu Asp Phe Asp Trp Phe Pro Thr Phe Phe Thr Gly
            1140                1145                1150
```

```
Ala Ala Thr Gly Thr Thr Ala Ala Met Ala Thr Ala Arg Ala Thr Thr
       1155                1160                1165

Val Ser Arg Leu Pro Ala Ser Ser Val Thr Pro Arg Val Tyr Pro Ser
   1170                1175                1180

His Thr Ser Arg Pro Val Gly Arg Thr Thr Ala Pro Pro Thr Thr Arg
1185                1190                1195                1200

Arg Pro Pro Thr Thr Ala Thr Asn Met Asp Arg Pro Arg Thr Pro Gly
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His Gln Gln Pro Ser Lys Ser Cys Asp Ser Gln Pro Cys Leu His Gly
           1220                1225                1230

Gly Thr Cys Gln Asp Gln Asp Ser Gly Lys Gly Phe Thr Cys Ser Cys
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Thr Ala Gly Arg Gly Gly Ser Val Cys Glu Lys Val Gln Pro Pro Ser
   1250                1255                1260

Met Pro Ala Phe Lys Gly His Ser Phe Leu Ala Phe Pro Thr Leu Arg
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Ala Tyr His Thr Leu Arg Leu Ala Leu Glu Phe Arg Ala Leu Glu Thr
               1285                1290                1295

Glu Gly Leu Leu Leu Tyr Asn Gly Asn Ala Arg Gly Lys Asp Phe Leu
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Ala Leu Ala Leu Leu Asp Gly Arg Val Gln Phe Arg Phe Asp Thr Gly
       1315                1320                1325

Ser Gly Pro Ala Val Leu Thr Ser Leu Val Pro Val Glu Pro Gly Arg
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Trp His Arg Leu Glu Leu Ser Arg His Trp Arg Gln Gly Thr Leu Ser
1345                1350                1355                1360

Val Asp Gly Glu Thr Pro Val Val Gly Glu Ser Pro Ser Gly Thr Asp
               1365                1370                1375

Gly Leu Asn Leu Asp Thr Asn Leu Tyr Val Gly Gly Ile Pro Glu Glu
           1380                1385                1390

Gln Val Ala Met Val Leu Asp Arg Thr Ser Val Gly Val Gly Leu Lys
       1395                1400                1405

Gly Cys Ile Arg Met Leu Asp Ile Asn Asn Gln Gln Leu Glu Leu Ser
   1410                1415                1420

Asp Trp Gln Arg Ala Ala Val Gln Ser Ser Gly Val Gly Glu Cys Gly
1425                1430                1435                1440

Asp His Pro Cys Leu Pro Asn Pro Cys His Gly Gly Ala Leu Cys Gln
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Ala Leu Glu Ala Gly Met Phe Leu Cys Gln Cys Pro Pro Gly Arg Phe
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Gly Pro Thr Cys Ala Asp Glu Lys Ser Pro Cys Gln Pro Asn Pro Cys
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His Gly Ala Ala Pro Cys Arg Val Leu Ser Ser Gly Gly Ala Lys Cys
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Glu Cys Pro Leu Gly Arg Ser Gly Thr Phe Cys Gln Thr Val Leu Glu
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Thr Ala Gly Ser Arg Pro Phe Leu Ala Asp Phe Asn Gly Phe Ser Tyr
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Leu Glu Leu Lys Gly Leu His Thr Phe Glu Arg Asp Leu Gly Glu Lys
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Met Ala Leu Glu Met Val Phe Leu Ala Arg Gly Pro Ser Gly Leu Leu
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Leu Tyr Asn Gly Gln Lys Thr Asp Gly Lys Gly Asp Phe Val Ser Leu
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Ala Leu His Asn Arg His Leu Glu Phe Cys Tyr Asp Leu Gly Lys Gly
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Ala Ala Val Ile Arg Ser Lys Glu Pro Ile Ala Leu Gly Thr Trp Val
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Arg Val Phe Leu Glu Arg Asn Gly Arg Lys Gly Ala Leu Gln Val Gly
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Asp Gly Pro Arg Val Leu Gly Glu Ser Pro Lys Ser Arg Lys Val Pro
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His Thr Met Leu Asn Leu Lys Glu Pro Leu Tyr Ile Gly Gly Ala Pro
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Asp Phe Ser Lys Leu Ala Arg Gly Ala Ala Val Ser Ser Gly Phe Ser
1665 1670 1675 1680

Gly Val Ile Gln Leu Val Ser Leu Arg Gly His Gln Leu Leu Thr Gln
1685 1690 1695

Glu His Val Leu Arg Ala Val Asp Val Ser Pro Phe Ala Asp His Pro
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Cys Thr Gln Ala Leu Gly Asn Pro Cys Leu Asn Gly Gly Ser Cys Val
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Pro Arg Glu Ala Thr Tyr Glu Cys Leu Cys Pro Gly Gly Phe Ser Gly
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Leu His Cys Glu Lys Gly Leu Val Glu Lys Ser Val Gly Asp Leu Glu
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Thr Leu Ala Phe Asp Gly Arg Thr Tyr Ile Glu Tyr Leu Asn Ala Val
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Ile Glu Ser Glu Lys Ala Leu Gln Ser Asn His Phe Glu Leu Ser Leu
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Arg Thr Glu Ala Thr Gln Gly Leu Val Leu Trp Ile Gly Lys Ala Ala
1795 1800 1805

Glu Arg Ala Asp Tyr Met Ala Leu Ala Ile Val Asp Gly His Leu Gln
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Leu Ser Tyr Asp Leu Gly Ser Gln Pro Val Val Leu Arg Ser Thr Val
1825 1830 1835 1840

Lys Val Asn Thr Asn Arg Trp Leu Arg Ile Arg Ala His Arg Glu His
1845 1850 1855

Arg Glu Gly Ser Leu Gln Val Gly Asn Glu Ala Pro Val Thr Gly Ser
1860 1865 1870

Ser Pro Leu Gly Ala Thr Gln Leu Asp Thr Asp Gly Ala Leu Trp Leu
1875 1880 1885

Gly Gly Leu Gln Lys Leu Pro Val Gly Gln Ala Leu Pro Lys Ala Tyr
1890 1895 1900

Gly Thr Gly Phe Val Gly Cys Leu Arg Asp Val Val Val Gly His Arg
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Gln Leu His Leu Leu Glu Asp Ala Val Thr Lys Pro Glu Leu Arg Pro
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Tyr Lys Asp Asp Asp Asp Lys Lys Ser Pro Cys Gln Pro Asn Pro Cys
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His Gly Ala Ala Pro Cys Arg Val Leu Pro Glu Gly Gly Ala Gln Cys
         35                  40                  45

Glu Cys Pro Leu Gly Arg Glu Gly Thr Phe Cys Gln Thr Ala Ser Gly
     50                  55                  60

Gln Asp Gly Ser Gly Pro Phe Leu Ala Asp Phe Asn Gly Phe Ser His
 65                  70                  75                  80

Leu Glu Leu Arg Gly Leu His Thr Phe Ala Arg Asp Leu Gly Glu Lys
                 85                  90                  95

Met Ala Leu Glu Val Val Phe Leu Ala Arg Gly Pro Ser Gly Leu Leu
            100                 105                 110

Leu Tyr Asn Gly Gln Lys Thr Asp Gly Lys Gly Asp Phe Val Ser Leu
        115                 120                 125

Ala Leu Arg Asp Arg Arg Leu Glu Phe Arg Tyr Asp Leu Gly Lys Gly
    130                 135                 140

Ala Ala Val Ile Arg Ser Arg Glu Pro Val Thr Leu Gly Ala Trp Thr
145                 150                 155                 160

Arg Val Ser Leu Glu Arg Asn Gly Arg Lys Gly Ala Leu Arg Val Gly
                165                 170                 175

Asp Gly Pro Arg Val Leu Gly Glu Ser Pro Lys Ser Arg Lys Val Pro
            180                 185                 190

His Thr Val Leu Asn Leu Lys Glu Pro Leu Tyr Val Gly Gly Ala Pro
        195                 200                 205

Asp Phe Ser Lys Leu Ala Arg Ala Ala Ala Val Ser Ser Gly Phe Asp
    210                 215                 220

Gly Ala Ile Gln Leu Val Ser Leu Gly Gly Arg Gln Leu Leu Thr Pro
225                 230                 235                 240

Glu His Val Leu Arg Gln Val Asp Val Thr Ser Phe Ala Gly His Pro
                245                 250                 255

Cys Thr Arg Ala Ser Gly His Pro Cys Leu Asn Gly Ala Ser Cys Val
            260                 265                 270
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Pro Arg Glu Ala Ala Tyr Val Cys Leu Cys Pro Gly Gly Phe Ser Gly
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Pro His Cys Glu Lys Gly Leu Val Glu Lys Ser Ala Gly Asp Val Asp
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Thr Leu Ala Phe Asp Gly Arg Thr Phe Val Glu Tyr Leu Asn Ala Val
305                 310                 315                 320

Thr Glu Ser Glu Leu Ala Asn Glu Ile Pro Val Glu Lys Ala Leu Gln
                325                 330                 335

Ser Asn His Phe Glu Leu Ser Leu Arg Thr Glu Ala Thr Gln Gly Leu
            340                 345                 350

Val Leu Trp Ser Gly Lys Ala Thr Glu Arg Ala Asp Tyr Val Ala Leu
        355                 360                 365

Ala Ile Val Asp Gly His Leu Gln Leu Ser Tyr Asn Leu Gly Ser Gln
    370                 375                 380

Pro Val Val Leu Arg Ser Thr Val Pro Val Asn Thr Asn Arg Trp Leu
385                 390                 395                 400

Arg Val Val Ala His Arg Glu Gln Arg Glu Gly Ser Leu Gln Val Gly
                405                 410                 415

Asn Glu Ala Pro Val Thr Gly Ser Ser Pro Leu Gly Ala Thr Gln Leu
            420                 425                 430

Asp Thr Asp Gly Ala Leu Trp Leu Gly Gly Leu Pro Glu Leu Pro Val
        435                 440                 445

Gly Pro Ala Leu Pro Lys Ala Tyr Gly Thr Gly Phe Val Gly Cys Leu
    450                 455                 460

Arg Asp Val Val Val Gly Arg His Pro Leu His Leu Leu Glu Asp Ala
465                 470                 475                 480

Val Thr Lys Pro Glu Leu Arg Pro Cys Pro Thr Pro
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